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THE INFLUENCE OF SCIENTIFIC DISCOVERY AND INVENTION ON
SOCIAL AND POLITICAL PROGRESS.

ORATION

DELIVERED BEFORE THE

PHI BETA KAPPA SOCIETY

OF

BROWN UNIVERSITY,

PROVIDENCE, R. I.,

ON

COMMENCEMENT DAY,

SEPTEMBER 6, 1843.

By JOB DURFEE

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PROVIDENCE:
B. CRANSTON AND COMPANY.
1843.

C. H. M.

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ORATION.

GENTLEMEN OF THE SOCIETY :

The influence of discovery in science, and of invention in art, on social and political progress, may certainly form an appropriate theme for an occasion like the present :—and if, during the short time which has been left to us by the preceding exercises of the day, I should endeavor to draw your attention to this subject, rest assured that the attempt will not be prompted by a confidence in any peculiar qualifications of mine for the task, but from a desire, in some manner, to fulfil a duty, which perhaps with too little caution I undertook to perform.

We are disposed, I think, to ascribe too much of human progress to particular forms of government—to particular political institutions, arbitrarily established by the will of the ruler, or wills of the masses, in accordance with some theoretic abstraction. And this is natural enough in a country where popular opinion makes the law. But, to the mind that has formed the habit of penetrating beyond effects into the region of causes, it may, I think, appear that the will of the one, or the wills of the many, equally, are under the dominion of a higher law than any that they may ordain ; and that political and social

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institutions are, in the end, drawn or constrained to all their *substantial* improvements, by an order of mind still in advance of that which rules in politics, and flatters itself that dominion is all its own.

If it be true that knowledge is power, then, it would seem to follow, that any change in the arts and sciences, favorable or unfavorable, must be followed by corresponding changes in society. And such, in fact, we find to be the result. When the arts and sciences become stationary, all social and political institutions become stationary ; when the arts and sciences become progressive, all social and political institutions become progressive. The universality of this fact, clearly demonstrates the necessary connexion of cause and effect between scientific and social progress. And if the form in which this statement is made be correct, it does as clearly show which is the cause, and which the effect, and that we are not to seek for the causative energy of human progress in the wisdom of the political, but in that of the scientific and inventive mind. Let it moreover be recollected, that, at least in these our times, the scientific and inventive genius has a universality which elevates it above all human jurisdictions ; that it belongs to the whole humanity ; can be monopolized by no government ; and that its discoveries and inventions walk the earth with the freedom of God's own messengers.

This is an important position, which I shall presently endeavor further to confirm, by some brief references to history.

But though we may find the cause of human pro-

gress in the scientific and inventive genius of the race, still we may question the extent of its power over those institutions that are created and sustained by the social or political will. I shall ascribe to it, on the present occasion, none but the power of ordaining for those institutions their only true law of progress. It prescribes to them no particular form of government ; but requires that every government, whether in theory despotic or liberal, should be so administered as to enable the human mind to put forth, in a manner consistent with order, all its powers for the benefit of humanity. It forces upon government, whatever be its form, the necessity of extending practical freedom to all. It requires it, upon the penalty of ceasing to exist, to carry out to the utmost extent, both in the social and political spheres, every important discovery or invention, and thus coerces, by a process its own, obedience to its supreme authority.

But what is this process ? It may be a short, but it is a sufficient answer for the occasion, to say, that it is the elevation of mind over matter ; in the material universe, it is the extension of the dominion of man over the powers and forces of nature ; in humanity it is the orderly elevation of the high moral and intellectual energies over the brute force of passion, prejudice, and ignorance.

In the realm of science and art, the most exalted geniuses and the brightest intellects that it contains, are ever at the head of affairs. They are there, not by the appointment of government, nor by the election of the masses, but by a decree of the Su-

preme Intelligence. And, if it be true, as I hope to demonstrate, that their discoveries and inventions rule in the grand course of events, it will afford some consolation to reflect, that, whether government falls into the hands of demagogue or despot, (and it suffers equally from either,) this high order of intellect doth, after all, by setting limits to their follies, guide and govern in the main. To it we bow with deferential awe—to it we willingly own allegiance, and are proud to confess ourselves its subjects.

Time, indeed, was, when this order of mind formed a union with government, and was itself despotic, or was ruled by despotism. Such seems to have been its condition in ancient Egypt—such may be its condition still, under those oriental governments where every change must operate a social disorganization ; but such, from the earliest date of Grecian freedom, has never been its condition in the sphere of Western civilization. It has been subject to restraint, it has suffered persecution, but it has formed no necessary part of any local government. It has been under no necessity of limiting its discoveries or shaping its inventions, to suit particular political or social organizations. At that early date it cut its connexion with these, and, by so doing, found the Archimedean stand-point and lever, by which it is enabled to move the world.

But where and what is this point on which the scientific intellect takes this commanding stand ? It is not to be found in that space which can be measured by a glance of the eye, or a movement

of the hand. It is to be found only in the world of mind ; and even there, only in that perfect reason, which is at once a law to humanity, and the revealer of all truth. It is a point which lies even beyond the extravagant wish of Archimedes. Perhaps he had unwittingly found it, when engaged in the solution of that mathematical problem which cost him his life ; when, whilst the streets of Syracuse were thronged with bands of military plunderers, and the Roman soldier, amid shouts of triumph, entering his study, placed the sword at his throat, he exclaimed, " Hold, friend, one moment, and my demonstration will be finished." Far elevated above local interests, far above the petty strife and confusion of the day, it is a point, from whose Olympian height, all humanity is seen dwindled to a unit. It is in this elevation above the world and its turmoils, that the scientific philosopher interrogates the deity of truth, and communicates its oracles to the whole nether humanity ; confident, that as they are true, whatever may be their present effect, they will ultimately promote the progress of the race.

Nor is he at liberty to abstain from interrogating this deity ; to refrain from the efforts to discover, and consequently to invent, whenever a discovery is to be actualized by invention. That law which prompts the mind spontaneously to search for the cause of every effect, and for the most effectual means for the accomplishment of the end, is not superinduced by education. It comes from a source above man ; it is constitutional, therefore irresisti-

ble ; and he makes his discoveries and inventions because he must make them.

Now the sciences and arts, comprehending not merely the liberal and fine, but the physical and useful, consist of a logical series of discoveries and inventions, commenced at the earliest date of human progress, and continued down to the present time, the last grand result being the sum of all the labors that have gone before it ; nay, not unfrequently the sum of the blood and sufferings of the ignoble masses, as well as of the labors of the exalted philosophic mind. I mean not to say that this law of reason, which impels man to discover and invent, conducts him from step to step, from truth to truth, in a direct line to the far result ; for he has his liberty, and he often deviates, not for a day merely, but for a generation ; nay, sometimes for a whole epoch. But, however widely he may err, he at last discovers the error of the first false step that he has made ; his false premise is brought to its *reductio ad absurdum* ; and, with the benefit of all the experience, discipline, and knowledge that he has acquired by pursuing it to this result, he returns to the point of departure, and, with redoubled energy, follows out the demonstration direct, to its *quod erat demonstrandum*.

Gentlemen, excuse me, whilst on an occasion so purely literary, I draw an illustration of this idea from a thought suggested by an invention in a branch of mechanic art.

I lately visited an establishment, perhaps in some respects the first of the kind in our country, for the

manufacture of iron into bars. I stood by, and for the time, witnessed the operation of its enginery. I saw the large misshapen mass of crude metal taken blazing from the furnace, and passed through the illumined air to the appropriate machine. I saw it there undergo the designed transformation. It was made to pass repeatedly between two grooved, revolving iron cylinders, of immense weight. At every turn of the wheel it took new form ; it lengthened, stretched, approximating still its intended shape, till at the end of the operation it came forth a well-fashioned fifteen or twenty foot bar of iron, ready for the hand of the artizan, or the machine that was to resolve it into forms for ultimate use.

When I had witnessed this process, I thought I did not want to go to the banks of the Nile to be assured either of the antiquity or the progress of the race. An older than the pyramids was before me ; one which, though voiceless, told a tale that commenced before the Pharaohs, before the Memnon, before Thebes. Here was a material which had been common to the historical portion of the human family for the space of five or six thousand years. Millions on millions of minds had been tasked to improve the process of its manufacture. I went back, in imagination, to that primitive age, when the first unskilful hand—some fur-clad barbarian or savage—drew a mass of the raw material from the side of some volcanic mountain. He constructed a vessel of clay for its reception, and, somewhat in imitation of the process he had witnessed, he placed it over a heap of blazing combustibles. With long and patient

labor and care, he reduced it to a liquid mass ; and then cast it into the shape of some rude implement of husbandry or war. Exulting in his success, he brandished the instrument in triumph, and deemed it the *ne plus ultra* of human improvement.

He disappeared; but he left a successor. I followed him, in imagination, and saw him take the art at the point at which his predecessor had left it. He had discovered that the material was not only fusible, but ductile ; and with sweat and toil that knew no fatigue, he gradually beat the heated mass into the shape of something like a hatchet, or a sword. At this point he also disappeared ; but his successor came, and still improved on the labors of his predecessor. Generation thus followed generation of apt apprentices in the art ; they formed a community of masters skilful to direct, and of servants prompt to obey. They fashioned new implements as their numbers increased, and the wants of advancing civilization varied and multiplied. The master-minds studied, and studied successfully, all the various qualities and susceptibilities of the metal. They became skilful in all its various uses, in agriculture, commerce, manufactures and war. Yes, ye philanthropists ! in war ! For humanity actually armed herself against humanity to draw out and discipline the faculties of the human mind, and bring the art to perfection. She instituted a school of her own, and was herself its stern and unyielding preceptress. She chastened her laggard and truant children as with a rod of iron. I saw her force her sons into bondage by thousands—aye, by millions. I saw

them sweat and toil at the anvil like so many living machines. They were once free barbarians; but they were now in the school of civilization. They were learning something of the arts. They would not labor from the love of labor, but only from constraint and fear. Their willing task-masters grew strong and powerful in the labors of the barbarous masses, that superior knowledge and power had subjected to their will. They took counsel together, and still went forth to conquer and enslave. Ages, centuries, epochs passed away, and still the same process was going on. They built up for themselves a bright and glorious intellectual civilization, that extended far and wide over the earth; yet it was but the gilding of the surface; for it had its deep and dark foundations upon mind in bondage, upon masses in slavery. And their power grew feeble from expansion. The numbers of the free would not suffice to sustain their dominion. And they sought for aid, but could conceive of none, save in the enslaved masses beneath them. And now came, improved by long ages of civilization, the scientific and inventive genius to their aid. She glanced back upon the past; she discovered the point of departure from the progress direct, and the source of the errors whence this appalling result. She sought, and sought not in vain, to substitute the brute forces of nature for the labor of human hands. Then began the water-wheel to turn at the falls, and the trip-hammer to sound upon the anvil, and the manacles of the slave to fall off, as improvement was built upon improvement, in regular consecutive order, till the

burning bar shot from the perfected machinery almost unaided by human strength.

This brought me to the process which I had just witnessed, and I thought I saw in it the grand result of the discipline and labor of the race for thousands of years. I thought I saw in it, not only the reality of a progress in the race, but the unquestionable proof of the existence of a law of progress, carrying on its grand process through the whole humanity by a logical series of causes and effects, from its earliest premises, in far distant antiquity, to its latest result; and that the law, which rules in discovery and invention, is one and identical with that which governs in the progress of the race.

I speak not here of particular communities or nations, for nations, like men, decay and die—but of the whole humanity, which is as immortal as the spirit of man, or, perhaps, as the divinity that rules it; which feeds and grows in one branch of its existence upon the decaying energies of another, and which is thus ever renovating its vital and intellectual energies out of the past, and, amid unceasing decay, enjoying a perpetual rejuvenescence. On such an existence doth this law of progress ever act; constantly forming and energizing the individual intellect by the unceasingly accumulating wisdom of the past, and by appropriating the forces of nature to the uses of social man, it is, at this day, carrying on in the world of mind that work of creation, which the Divine Author of humanity did but commence in the garden of Eden.

There may be limits to man's capacities, but to the energies of nature which those capacities, acting under this law, may put in requisition, there are no limits. Each new discovery in science suggests the existence of something yet undiscovered ; each new combination in art, on trial, suggests combinations yet untried ; thus revealing, on the one hand, a law of suggestion, which, from the nature of mind, must ever act ; and, on the other, objects and subjects of action which are as boundless, and as inexhaustible as the universe.

Now if this be, and must continue to be the true process of discovery and invention ; and if, in its progress, as I hope to prove, it must constantly reflect itself into all social and political organizations, we have an assurance of progress, not dependent, thank Heaven, upon carrying to their results any political abstractions, or any ideas of popular sovereignty drawn from the perversions of revolutionary France ; but upon a law of progress, which God has ordained for the government of humanity, and which is as certain and eternal in its operations as any law which governs the material universe.

But let us see, by a brief glance at the page of history, whether this law of progressive discovery and invention, doth, or doth not, rule in social and political progress.

And here permit me to premise, that the sciences and the arts, considered with reference to social and political progress, may be divided into two classes ; first, those which are necessary or useful as aids or instruments of thought and sentiment ; as among

the sciences, grammar, rhetoric, logic, geometry; and among the arts, music, poetry, painting, sculpture, architecture, and the art of writing, or preserving the memory of the past. Second, those whose immediate object it is to enlarge our knowledge of nature, and improve the physical condition of man. These are the physical sciences and useful arts improved by science. In the progress of the race, the first class is necessarily brought earliest to perfection. Man must be disciplined to think logically, and to communicate and preserve his thoughts and sentiments, before he can make any considerable progress in the physical sciences and useful arts. Hence it is, that, among the ancient nations of the earth, we find this high order of mind almost exclusively engaged in carrying the first class to perfection, whilst it devoted comparatively little attention to the physical sciences and useful arts. Indeed, the useful arts seem to have been abandoned almost entirely to slaves. They were carried on by manual labor. Invention had not yet subjected the forces of nature to the human will, and that vast amount of toil, which is required to support a splendid civilization, was urged on by an immense mass of people in bondage.

I would further observe, that as the scientific and inventive order of mind subsists, generally, independent of any necessary connexion with any particular government, so its influence is not to be traced in the history of this or that people or community merely, but rather in that of a common civilization ; such as that of classical antiquity, or modern

christendom, consisting of a community of nations, in which one government or society acts upon another, and from which, through this very diversity, that order of mind derives its power to coerce. It acts through one government on another, through one society on another, through society on government, and through government on society ; its discoveries and inventions every where inviting the appropriate change, at first from policy, but if not adopted from policy, compelling its adoption, at last, by force of the principle of self-preservation.

History enables us to show, in but a few instances, the effects which each succeeding discovery or invention produced on society in the infancy of the race ; but it does enable us to see their combined results in the form which society took under their dominion.

In Egypt, the sacerdotal order was the depository of all the science and learning of the age ; and that order, in fact, seems to have been the governing power. Now what were its sciences, real or pretended ? Geometry, astronomy, astrology, and a mystic theology. These were studied as the great sciences of ancient Egypt, and carried out into their respective arts ; and, to say nothing about their geometry and astronomy, have not the two last left the distinctive impress of their mysticism upon every thing that remains of this ancient civilization ? It appears in the labyrinth, the pyramid, the temple, and the hieroglyphics with which they were blazoned ; and in the statuary, the sphinx, the veiled Isis, and mute Harpocrates, with which each entrance was

sanctified. Society divided itself, spontaneously, into castes. Where there is progress, the highest order of intellect must lead, and the priesthood of Egypt, with the king at their head, necessarily stood first. Next to them the warrior caste, by which all was defended or preserved. Beneath them, the mass consisting chiefly of slaves, or those who were elevated little above the condition of bondmen. These were again divided into castes, corresponding to the laborious arts which they followed, with, probably, each its tutelary deity. The son followed the occupation of his father, and society underwent a sort of petrifaction, from the arts which admitted of no change without destruction. This arrangement could not have resulted from the designs of a cunning priesthood, establishing and ordaining the organization for their particular benefit. It must have grown up with the progress of the sciences and arts. Each art, newly invented or introduced, had its artisans, who transmitted, like the sacerdotal order, their peculiar mystery to their particular posterity. The governing power, since it embodied within itself all science, and took its constitution from it, might, after the arts had reflected themselves into society, have very naturally interfered to protect that social organization, into which, as mysteries, they spontaneously fell.

But let us pass to Greece. No one doubts that Greece owed her civilization to her literature and arts. But to what was she indebted for the successful cultivation of these? It has been ascribed to the freedom of her political institutions. But, again it

may be asked, to what were *they* indebted for that freedom? Is it not plain that they were indebted for it to the fact, that her literature and arts early took root in the vigorous barbarism of distinct and independent communities, and that as her political institutions settled down into definite and fixed forms, they took their complexion and shape necessarily from the arts and literature cultivated by society? In Lacedemon, the art of war alone was cultivated, and she was, for long, exclusively a martial State; but was finally obliged to give way to the influences operating around and within her. As to all the rest of Greece, it was under the dominion of the fluctuating wills of the many, or the few, and there was nothing permanent to give regular progression and tendency to political and social institutions, but the arts and sciences cultivated.

Greece commenced her civilization with colonies from Egypt and Phœnicia. They brought with them the arts and sciences, and something of the wealth of the parent countries, and ingrafted all on her active barbarism. And here, again, the immediate influence of the newly introduced sciences and arts, or of any particular discovery or invention, rarely appears in history, and is but dimly shadowed forth in the myths of the golden and heroic ages. But until they were introduced, Greece was peopled by bands of roving savages. Piracy was an honorable profession; the coast could not be safely inhabited; one savage band was continually driven back upon another. Attica was spared for its poverty. The Corinthians made the first great improvement in na-

val architecture. They invented the war galley of three banks of oars. They constructed a navy of like craft. This was followed by great results ; they cleared the Grecian seas of pirates ; nations settled on the coast, and by like means kept them clear. The Mediterranean was laid open to honest traffic ; commerce flourished ; the arts flourished. The Grecian communities took the longest stride in the infancy of their progress, from this simple improvement in naval architecture,—the longest with the exception of that made by the Trojan war. That war did for the Greeks what the crusades in modern times did for the nations of Europe. It made them known to each other ; disciplined them in a common art of war ; made them acquainted with a higher civilization and its arts, and restored them to their country with a common history, and themes for their bards of all time.

Greece, it is believed, presents the first instance of a civilized people, in which the exercise of the powers of government, and the almost exclusive cultivation of the sciences, are not to be found in the same hands. The sacerdotal corporation in Greece, did not embrace all learning, as in Egypt, and did not, as there, control the state. Science and art, absolved from political connexion, stood, then and there, on the same independent ground, as in our own age and country. Philosophy, it is true, was held in check by superstition ; but government did not assume to restrain, control, or direct improvement in art and science. And now, what was the result of this independent and isolated

existence of the scientific mind upon the social and political organizations of Greece ? It seems to me to have been immense. Whatever of art or science was introduced from Egypt, found no corresponding social organization in Greece, and the bondage of caste there never appeared, and for this reason it is, that of all the races of men, the Grecian is the first to present us with an intellectual people ; a people intellectual and progressive by force of its own internal and all-pervasive action. Science was no mystery, and each Greek was at liberty to cultivate whatever branch of knowledge or art, it to him seemed meet ; and therefore it was, that Grecian society necessarily became free to the extent to which this cultivation could be carried, and *there* freedom stopped—*there* slavery commenced. Those who were consigned to the labors of the industrial arts, if it had been permitted, had neither the means nor the power to cultivate the sciences ; and they were slaves.

Every free Greek did or might cultivate grammar, logic, rhetoric, music, and geometry. And what was the product of these sciences ? The fine arts. They improved language ; they improved the power of expressing thought and sentiment ; and they produced philosophers, poets, historians, orators, sculptors, painters, and architects. These produced an ever enduring literature, and specimens in the fine arts, destined to become models for all time. The sciences and arts of Greece became the sciences and arts of Rome and the Roman Em-

pire, and were diffused to the full extent of Roman conquest.

I will not indulge in any common place rhetoric about Grecian civilization. You know what it was. The only point to which I would here call your attention is, that the arts and sciences of classical antiquity were not effects of the improved character of the social and political institutions of the epoch, but on the contrary, that their improved character was the result of the scientific progress of the common mind, which progress went on in obedience to no law, save that which God has ordained for its government.

But it was the liberal sciences and the fine arts that were mainly cultivated in this ancient civilization. Man had not yet learned to go abroad out of himself into nature to search for facts. He found the elements of the sciences and arts, which he almost exclusively cultivated, within his own mind, or within his immediate social sphere. He was preparing the necessary means, the instruments, by which he was in after times to explore the universe, and extend the sphere of social improvement by the physical sciences and useful arts.

And now what was the consequence of this perhaps necessary restriction of discovery and invention? A superficial civilization, grand and imposing it is true, but still a civilization that went no further than the practically free cultivation of the predominant arts and sciences of the epoch; a civilization that did not penetrate the great mass of human society. The laborious industry by which it was supported, was carried on by an immense

mass of unintellectual bondmen, who were to be employed by their masters, lest they should find employment for themselves. The useful arts became mysteries, and the secrets of nature remained secrets still.

Every where, throughout this ancient civilization, whether Grecian or Roman, the same horizontal division of society prevailed, and in portions of like ratio. A portion of the social mind, large, it is true, if compared with any thing in preceding history, was cultivated; but still a very small portion, if compared with the masses in bondage. In Attica, the proportion of the freemen to the whole enslaved population, was as two to forty; in the Roman empire, at one time, as seven to sixty; and the bondmen subsequently so far increased, that armies sufficient for the defence of the state could not be enlisted from the freemen. Beneath this bright covering of civilization, what a vast amount of intellectual susceptibility lay slumbering in the night of ignorance and bondage!

The predominant arts and sciences of this epoch were at last brought to their perfection. They ceased to advance, and society became stationary. The mind of Asia and the south of Europe could go no further. It was the hardy vigor of the North, alone, that was competent successfully to use the instruments which this ancient civilization had perfected; to go out of the sphere of social man into nature; to regenerate and multiply the useful arts and sciences, and, by their means, to elevate the masses from the condition of bondage to the free-

dom of intellectual life. Northern barbarism therefore came ; and it conquered, for this simple reason, that the arts and sciences of antiquity had not made the civilization of the epoch sufficiently strong to resist it.

Gentlemen, we are not dealing with a history of events, but with the causes which produce them, and especially those changes which add permanently to the improvement of the social and political condition of man. I know you may follow these changes in the history of events, civil, religious and military ; but I am endeavoring to point out their origin in those causes which gave the institutions they produced, shape, consistency and duration ; and to demonstrate, that they are not to be found in accident, or in the arbitrary dictates of the human will, but in an eternal law of mind which especially manifests itself in the arts and sciences. For this reason it is not necessary to cite all history, but merely a number of its facts, sufficient to establish the position.

And now, lest I should exhaust your patience, I pass the gulph of the middle ages with this single observation, that it was a season during which Christianity was engaged in humanizing and softening the heart of barbarism, and thus qualifying its mind to take form under the influence of modern art and science ; and landing on the margin of our present civilization, I proceed to discuss the social and political effects of scientific discovery and invention in modern times. And here we have an opportunity of tracing those effects with historical

certainty to their causes, and of proving, as I hope, to minds the most sceptical, the truth of our position.

But before doing this, I must speak of the social condition of the mass of society on which early modern discoveries produced their effects. Time will permit me to state it only in the most general terms ; and perhaps on an occasion like the present, and to such an audience, this is all that is necessary or even proper.

Guizot, in his admirable history of the civilization of modern Europe, dates the commencement of modern society in the sixteenth century. But modern society came out of a pre-existent state of things, which state of things first manifested itself, and became general in the tenth century, when Europe rose out of the bosom of a chaotic barbarism, and took distinct form in the feudal system. This remark, however applies more particularly to the north and west of Europe. It was whilst this was the predominant system, that she commenced and carried on the crusades, and not only made herself acquainted with herself, but with the remnants of civilization in the east and south of Europe. It was not until the thirteenth century, that she manifested a decided tendency to her present political and social organization. And it is to a mere glance at her condition at this period, that I would now invite your attention.

In the East was the Greek, the remnant of the ancient Roman empire, still consisting of the same elements which distinguished it in the time of Constantine, a master class and a servant class. Those

of the first class, eclipsed though they were, "had not yet lost all their original brightness." They were still imbued with something of the philosophy and literature of ancient Greece ; and, in point of numbers, they bore perhaps about the same ratio as their progenitors to the immense mass of slaves beneath them. In Italy, were the Italian republics, exhibiting remnants of the ancient Roman municipal institutions. They cultivated the Latin literature, and were soon to be engaged in renovating the fine arts of classical antiquity, and were already, for the era, extensively employed in commercial enterprise. The ratio of the free to the bond, was probably about the same as it had been during the Roman empire. Subject to these exceptions, all Europe fell under the feudal system, and certain corporations, called free cities, which, situated within the fief of some baron, wrested or wrung from him whatever privileges they could, by force or compact. There were no nations—no governments on a large scale. Europe was dotted all over with baronies and these free cities. Each barony, whatever it might be in theory, was a little sovereignty. Each baron, with his retainers, under a load of armor, and armed with sword and lance, and other offensive weapons of the times, occupied his castle in the country. He willingly submitted to no law, save that of superior force. His kingdom was his fief, and his subjects were his vassals, who followed him in war, or tilled his land, or performed for him other laborious service. The free cities were walled ; the dwelling of the burgher

was not merely in law, but in fact, his castle, protected by tower and parapet ; and the burgher himself, when he ventured abroad to thread the narrow lanes and crooked streets of his city, went armed with lance, and often under cover of armor. The Romish church presented the only element which pervaded all these little sovereignties and cities. Except among the clergy and the civilians, there were no scholars ; and to say nothing about their vassals, perhaps not one in a hundred of the noble barons themselves, could either read or write. Nay, they were proud of their ignorance of those accomplishments. The author of *Marmion* means to give them their true character, at a much later period, when he represents the Douglas as exclaiming :

Thanks to St. Botham ! son of mine,
Save Gawain, ne'er could pen a line ;
I swore it once, I swear it still—
Let my boy bishop fret his fill.

It is true, that when the crusades ceased, something of that zeal, which had originated and carried them on, began to pass into new channels. Those immense masses, that had passed out of the north and west of Europe, had made themselves acquainted with the advancing civilization of the Italian republics, and with the remnant of ancient civilization in the Greek empire. They had penetrated into Asia, and had heard and credited all the fables that oriental imagination could invent, of the wealth and splendor of the gorgeous East,

Whose richest hand
Showered on her kings barbaric pearl and gold.

And they returned to their respective countries with

these fables, and stimulated a thirst for further knowledge ; but above all, they excited the love of adventure and discovery, a yearning for the yet unexplored and unknown ; breeding a vague but confident faith in a something vast, boundless, mysterious, that was yet in reserve for daring enterprize, or unyielding perseverance—haply a true augury this, of the discovery yet to be made on this side the Atlantic—yet, however fertile their imaginations, the most ardent of them had not conceived the possibility of the existence of this continent. Here it lay, secreted in the western skies, beyond an ocean whose westward rolling billow, it was then deemed, broke on no shore toward the setting sun, awaiting, in all the grandeur of waving forest, towering mountain, and majestically winding stream, the further discoveries of science, and the future wants of a progressive civilization.

Now let us for one moment contemplate this condition of affairs throughout Europe—this vast number of scattered petty sovereignties, and municipal communities—this general pervasive ignorance—this enormous mass of vassals, serfs, and slaves, which underlaid and gave foundation to all ; and then ask ourselves, what process of legislation or compact, originating merely in the human will, could have resolved this jumble of conflicting materials into those organized nations and communities of nations, which now constitute the civilization of all christendom. We can conceive of no process so originating, that could possibly have brought

about this grand result. Yet human legislation and compact were the secondary causes by which it was accomplished. But what, humanly speaking, was the primary cause? that is the subject of our inquiry. I find it in a necessary result of that law of scientific progress, which I have already pointed out; I find it in the grand revolution which at this time took place in the science and art of war; in one word, I find it in the invention of Gunpowder. Start not with incredulity and aversion at the annunciation; the cause of causes is there. Tell me not of wars domestic and foreign, of treaties, of parliaments, of councils of state and church. They were the mere external symptoms of the action of the all-sufficient internal cause. Yes, the first cannon that projected the ball of stone or iron, announced, in its own voice of thunder, the final doom of the feudal system, the centralization of nations, the ultimate emancipation of the enthralled, and the establishment of a christian civilization on a basis never more to be periled by the inroad of barbarian, or the invasion of Turk. The revival of ancient learning might have done much toward again planting over society with the civilization of classical antiquity; but neither that nor mere human legislation could have overthrown the feudal system, centralized nations, penetrated, and finally emancipated the nether mass of bondmen, and forever shut out the inundations of barbarism.

Feudalism gave way either immediately, in anticipation of the results of the discovery, or finally, under the direct operation of its physical force.

What availed the Herculean arm, or giant muscular force? What availed the panoply of helmet, and shield, and coat of mail? Nay, what availed tower and trench, parapet and battlement, whether of baronial castle, walled city, or burgher's armed abode? They all crumbled into atoms, or stood scathed and powerless before the blast of this tremendous invention.

Gunpowder, in the material world, is a most terrible leveller; it makes no distinction between the strong man and the weak. But in the world of mind, it is a most determined aristocrat. It establishes "in times that try men's souls," none but the aristocracy of intellect. Nay, in the long run, it goes still further; for, since to command its service it requires national wealth, it perpetuates power in the hands of those only who know how best to use it for the benefit of all.

The barons abandoned their castles for the court of the sovereign, suzerain or lord; and that lord became the most powerful whose resources were the most abundant. Immense wealth, such only as a people at least practically free, can create, became necessary in order to carry on a war of offence or defence. The suzerain, or king, was thus at once converted into the friend, and became the liberator of bondmen. Vassals and burghers became subjects and citizens, practically free. And their freedom was guarantied to them by no plighted faith of kings; by no lettered scroll of parchment; but by an irreversible law of necessity, enacted by this sovereign invention. What it did for individuals, it did

for nations ; armies could no longer carry on war in a foreign country without keeping up a communication with their own ; and to conquer a new country, was to establish a new base for military operations against others ; and thus, from necessity, was established a community of nations, in which the safety of all found a guaranty only in the independence and freedom of each. Hence comes that law of nations which is recognized by all christendom, and that sleepless vigilance which guards and preserves the balance of power.

Gentlemen : After considering these consequences, permit me to ask you whether christendom be indebted for her progress, thus far stated, to human legislation, guided by some abstract theory merely, or to the sovereign law imposed upon her by this all-controlling invention ? When one nation had adopted this invention, all were obliged to adopt it, and christendom having thus necessarily received this power into her bosom, shaped her policy by the necessities which it imposed. Indeed, she owed her then, and owes her present condition, not to the foresight of her counsels guided by the speculations of her theorists, but to this law of human progress, which has overruled her follies and sustained her wisdom.

I have been considering an invention which begins its influence in the world of matter and reflects it inward to the world of mind. I now pass to another discovery or invention, that belongs to the same century, but which begins its influence in the world of mind, and reflects it outward to the world

of matter. You will at once understand me to refer to the art of Printing.

Were human progress a mere result of fortuitous events, and not the necessary operation of a law of mind proceeding from a designing reason, these two discoveries, made about the same time, might be inscribed in the list of remarkable coincidences. But they belong to no such list. The invention of printing, like every other, may be traced from its first rude essays down through a logical series of discoveries and improvements, urged on by the conspiring action of the whole humanity, to its last grand result, as the necessary consequence of all that has preceded it. It was necessary that a large portion of the human race should be educated to the use of letters; that the art of reading and writing should become widely diffused; the materials for copying cheap, and the demand for copies beyond the capacity of the penman to supply. You may accordingly trace the growth, which produced this invention, from the first symbolic painting of thought on rock or tree, by roving savage, to the mnemonic hieroglyphics inscribed on pyramid and temple; then to characters representing words; then to those representing syllables; till the very elements of the human voice at last take representative form in the alphabet. In this form it branches forth beyond the sacerdotal caste, and, like the banyan tree, repeats itself by striking its far-reaching branches into fresh soil. It passes from the Egyptian into the Phœnician, thence into the stronger intellectual soil of Greece; it multiplies itself throughout the Roman

empire, at every repetition making still further demands upon the labors of the hand ; it survives the middle ages, that its far extending root and branch might draw increased vigor from the northern mind, and that nether mass of humanity, which is at length thrown open to more genial influences ; and then it is, that this stupendous growth of all time puts forth, as its last fruit, this wonder-working art of printing. Readers had multiplied with the revival of ancient learning, with the progress of emancipation, with the love of the marvellous in romance, and the mysterious in religion, and demands for copies of great works, and especially for such as were sacred, or were so esteemed, could be satisfied in no way but by the labor-saving machinery of the press.

Now the military art must date its rude origin at the same distant epoch. It must have grown by force of the same law of suggestion, and therefore must have almost necessarily produced its corresponding invention of gunpowder, during the same century. Thus it was, that one and the same law of progress conspired to perfect these two grand inventions at about the same time. Twin sovereigns, the one to commence its labors in the world of mind, the other in the world of matter.

And what were the effects of the art of printing on social and political institutions ? Did it take law from the human legislator, or give him law ? Let us see.

It created, for the first time in history, what may be called a public mind. Cabined and cribbed though it was, within the forms of an age of despo-

tism and bigotry, that mind grew and expanded, till it felt the pressure of those forms as obstructions to its growth. It then reformed the legislator himself, and through him cast off its obstructions, and thereupon expanded, with a broader liberty, into a mightier stature.

This mind thus shaped itself, not upon general speculative ideas, but upon natural tendencies and habits of thought, coming from the hoary past, and common to all, and to which the inspiring influence of the press now gave an all-pervasive life. Society was thus made to feel its existence through its organized entirety through all its institutions and interests; and on this regenerated feeling, common to all, was established a true sovereignty of public opinion. Do not misunderstand me. When I speak of public opinion, I do not mean the wild impulse of minority or majority; I do not mean popular agitation or effervescence. I do not mean a state of mind indicated by mass meetings, barbecues, and the like. These may indicate a feverish state of the public mind, but they indicate no public opinion. On the contrary, they show that public opinion on the given subject is not yet formed. But I mean that opinion which is a natural, spontaneous growth, or proceeding from the organized whole; which is therefore in accordance with the political institutions, established interests, and the general moral and religious sense of a community. Until these are endangered, threatened, or disturbed, public opinion rests unmoved, and heeds not the angry discussions that are going on among the over-heated partizans of the day.

If, therefore, you would know what public opinion is, do not look to a party press that is doing what it can to draw forth an opinion favorable to the cause which it advocates, but look to the established interests, the intellectual character, and the moral and religious sense of the people, which the whole press, in all the variety of its departments, has contributed to form, and from them estimate what the common judgment, in the last result, must be.

Public opinion, in our country, indulges in no abstract speculations; it leaves them to the dreams of the theorist. In the full enjoyment of its own unobstructed freedom, it is never clamorous, it is never violent. It moves only on great occasions, and under the pressure of some stern necessity; but, when it does move, it is irresistible; it bears down all opposition before it. The demagogue frequently attempts to imitate the incipient stages of this movement, by an artificial agitation of the masses. Yet his imposture is sure to be detected in the end, by the fraudulent expedients to which he resorts in order to sustain that continued excitement in which alone he can live. Public opinion neither countenances such expedients, nor desires the agitation which they provoke. To it, all agitation is incidental, and results from extraneous causes, or from its partial manifestations. Sovereign in itself, it seeks not the aid of violently excited feeling, and when it unequivocally manifests itself, all agitation ceases, and the stream of events rolls quietly on.

It is when the course of the waters is obstructed,

and they are accumulating behind the obstruction, that this artificial, this counterfeit agitation begins. It is then that every monstrous thing, little and great, which peoples the flood, swells into unnatural dimensions, and each, from the small fry to the Leviathan,

Hugest that swims the ocean stream,

creates for itself its particular whirlpool and circle of bubble and foam, deceiving the inconsiderate spectator into the belief that all this is the agitation of the onward rolling flood, the indication of the natural tendency and pressure of the mighty mass. Yet let but the master-mind, which alone is competent to view the entirety *ab extra*, open the sluice-way, or the accumulating wave break the obstruction down, and the tide rolls tranquilly on, swallowing up in its prevailing current, whirlpool and bubble and foam, and little monster and great, and bearing them all quietly off to the ocean of eternal oblivion.

This is public opinion ; the gravitation of the "general mass of mind through all its institutions and interests toward its eternal centre ; and when it so gravitates, it is always right ; but this *artificial* agitation is generally wholly individual, and when it is such, it is always wrong ; since its object, whatever may be the pretext, is wholly selfish. It is only when the agitation is natural, spontaneous, and comes from an effort to express the common wants and desires of a people, and is conducted with a religious reverence for public morals, for good order,

and all truth, that it is ever the true harbinger of a genuine and enduring public opinion. A public opinion, based upon the generally received ideas of morality, religion, and law, doth in fact constitute the common conscience of a people ; and it is this conscience which in every great and trying emergency makes heroes or cowards of us all, as we may chance to be right or wrong.

It was a deep religious and moral feeling of this sort, for the first time brought into general activity by the diffusion of the Scriptures through the agency of the press, which in the sixteenth century commenced and carried on the great work of religious reformation. The obstructions to its efforts were mountainous, and a deep and wide searching agitation went before it, often mingling error with truth. It touched, it moved that principle which lies beneath the deepest foundations of all that is human, and at once all social institutions were agitated as by an earthquake. It taught the human to give place to the divine. It dashed government against government, institution against institution, man against man ; and urged on that series of religious revolutions, which for ages shook all Europe to its centre. It passed from religion into philosophy ; it took form in politics ; it produced its consequences in this country ; it exploded, with most murderous effect, the combustible monarchy of France, and is to this day, with almost undiminished energy, passing down its tremulous agitations through the present into the boundless future. It changed the aspect

of christendom ; it established Protestantism and Protestant states, and reformed Romanism itself.

Nobody can doubt that all these changes were the necessary results of the discovery of the art of printing. They date from the commencement of the reformation ; but the reformation could not have succeeded except by the aid of this art. Before this discovery, it had been repeatedly attempted both in church and out of church, and the attempts had failed ; but after this discovery, it was attempted by a poor obscure monk in Germany, and the attempt did not fail. It began in the social mind, and extended itself, after much agitation, by a regular and orderly process, through the legitimate legislation of each community, out into state and church.

The creation of means by which the common mind, in every country of christendom, may in an orderly manner produce every desirable and necessary change in government, is one of the important results of this discovery ; but its general social results have been no less important.

Let us go back, if we can, to the middle of the fourteenth century. Let us place ourselves in the bosom of that country whence all our political and social institutions are directly or indirectly derived ; nay, from which all our ideas of legal right and duty, of liberty and law, proceed ; and now, as in the midst of that century, let us see what the condition of the common mind is without the aid of this art. The first thing, then, that must strike our attention, is the general apathy and indifference of the mass around us, as to all matters of general, social and

political importance. There is no press, there are no newspapers, no periodicals, political, religious, literary, or scientific. In the place of the light which should come from these sources on the common mind, a profound darkness prevails, beneath which, all thought and action still rest in primeval slumber. But this is not all ; there are no books in circulation or use, save those few that are transcribed on parchment by the slow and tedious operations of the pen. If we enter their public libraries, the precious manuscripts are chained to the tables, or are guarded with the vigilance of armed centinels. If we enter their schools, the child is learning his alphabet from a written scroll furnished him by his master. What a mass of ignorance ; aye, and of necessary bondage ! How eagerly the million multitudes look up to the learned few for light and guidance ! With what intensity of attention do they hang on the utterance of their lips, and how carefully do they treasure up, in their memories of iron, the oracles that fall on their ears ! Ah ! these are days when it well behooves the learned to take heed what they say. They are rulers of necessity, if not of choice, and their words are law ; and well may they subject themselves to some general rules of thought and speech, and become a corporate community, sacerdotal or other, that the masses may take organization beneath them. Well is it for humanity and human progress that they have this absolute masterdom, and can hold, in unqualified subjection, the blind passions and terrible energies that are slumber-

ing under them! Now let us return to this our day and generation, and—

What a change! The press is pouring forth its torrents of truth or falsehood; the land is whitened with its daily sheets; the labors of a whole literary life may be purchased by an hour's labor of the mechanic; reading is the pastime of man, woman, and child, of prince and peasant; and strange voices, laden with strange thoughts, come thick on the classic ear, from cottage, and garret, and cellar. Where is that awful intensity of attention, that necessary and salutary subjection of the masses to the learned few? Gone! gone never to return! Every individual has become an original centre of thought; and thought is every where tending to clash with thought, and action with action. What is it that preserves order in the midst of all this tendency to anarchy? Why, it is done by that public opinion which subsists from the organized whole, and which the press itself has created. It is that public opinion, which, by its mere *vis inertiae*, sustains the law, and holds the struggling demon of discord down. It takes the place of the learned of old; and how important it is that its genuine authority should be sustained, and that no demagogue or insane enthusiast should be permitted to impose on the world its counterfeit!

This invention came not from legislation, but on the contrary, from the independent progress of science and art. Unaided by human policy, it organized for itself an empire within the privacy of the human mind; and, gradually extending its dominion from spirit outward into matter, brought human leg-

isolation, at last, to follow reluctantly in the steps of its progress. And when, at length, the old world became too limited for the intellectual growth which it had generated, or ancient institutions so incorporated with the life of nations as not to admit of that change which its irrepressible expansion required, it was then that the excess of this growth sought for and found in the newly discovered western world, an ample theatre for its enlargement.

A world newly discovered ! and how ? Why, by the progressive improvement of the art of navigation, aided by the then recent discovery or application of the virtues of the magnet ; an art which had taken its birth at the first stage of the progressive humanity, and which had proceeded, *pari passu*, with other arts, under a common law of progress, and which consequently had its corresponding discovery at this very juncture of affairs. Under the government of Divine Providence, all is order and law ; and notwithstanding the occasional outbreaks of human passion, and the perversity of the human will, that government compels its own puny creatures, whatever may be their motives, or however widely they may err, to shape their actions, at last, to its own grand train of events, and to carry out and fulfil its own great designs.

All three of those wonderful inventions, gunpowder, printing, and the compass, were necessary to the successful establishment of the Anglo-Saxon colonies on these shores. A number of tempest-driven Northmen doubtless discovered and colonized them in the beginning of the eleventh century ; but

their discovery was premature. It came not in the logical order of progress. The colonists necessarily failed to effect a permanent establishment. Their intercourse with the mother country was fraught with every peril of uncertainty; for over fog-wrapt surge, or beneath cloud-invested sky, they wandered without compass or guide. The shores themselves were occupied by ferocious savages, and fire-arms were wanting to subdue them. And then, what availed it to add the forest and barbarism of the new world, to the forest and semi-barbarism of the old? The invention of printing was yet wanting to reform the general mind of Europe, and to generate that spirit which in after times was to go forth to establish its emancipation on these shores, under the auspices of institutions to be formed from all that was select and glorious in the past. The establishment and developement of the institutions under which we live, are due to no arbitrary enactments, suggested by abstract speculations, but are the necessary results of the operations of these discoveries and inventions, on the free growth of the Anglo-Saxon idea of liberty and law.

Thus the state of the arts and sciences, in the beginning of the eleventh century, was not such as to enable the progressive humanity to discover these shores, and to establish permanent dominion on this side the Atlantic. Their accidental discovery, at that time, yielded no useful results. But the progress of the arts and sciences in the fifteenth century had been such, as to furnish all the necessary means for the purpose; and the discovery and colo-

nization of this continent followed as a necessary consequence in the consecutive order of events. Its discovery *then* took its place, as a logical result of the grand series of discoveries and inventions that had preceded it, and thus became a new premise, or broader basis for the progressive action of the race.

I might here dwell on the consequences of the discovery of America, and its settlement by civilized communities. I might show how those consequences reacted on the arts and sciences themselves, on the relations of nations, on their internal polities, their domestic habits, and social enjoyments; shaping their institutions and controlling their legislation. But I deem further historical illustrations unnecessary. The great truth that human progress is the result of an ever active law, manifesting itself chiefly in scientific discovery and invention, and thereby controlling legislation, and giving enduring improvement to all social and political institutions, cannot be a subject of historical question or doubt. It is a law as palpable in the history of the social mind, as the law of gravitation in the movement of matter. Indeed, I should feel that I owed a serious apology to my hearers for having detained them so long on this point, were it not for certain extravagant ideas which seem to be rife in the land. The advocates of those ideas would teach us that there is an absolute, undefinable popular sovereignty, which can, in a manner its own, and at any moment, carry a certain supposed natural equality into social and political life, and *thereby* elevate poor human nature, however rude and degraded its condition, at

once, as by a sort of magic, into a state of supreme and absolute perfection. When this sovereignty does not itself act to this end, it invokes the legislature, which is supposed to be competent to do nearly as much. No doubt government can do much ; it can suppress insurrection, it can repel invasion, it can enforce contracts, preserve the peace, concentrate and protect the existing arts ; but all this is to organize, and sustain organization, and not to establish the *natural* equality. Yet this is all that government can do to promote human improvement ; but in doing this, it does but act in obedience to that law, by which God governs in the progress of the race.

The idea that legislation necessarily acts an inferior part in human progress, that this progress is governed by a law that overrules and controls political sovereignty, may be humbling indeed to the demagogue, who would make every thing bend to the popular will. But there this law is, an undoubted and incontrovertible reality, which will bear with no paltering, but demands the obedience of all, on the penalty of degradation or ruin. The true statesman, the real promoter of human progress, at once recognizes, and feels proud to obey it. He feels that in so doing, he is performing the most elevated and dignified of duties. For though by legislation he cannot advance the entire humanity a single step, yet he may, by legislation, materially advance the nation for which he legislates. You may be able to add nothing to the light of the sun, yet you may concentrate his rays in a focus, and

thus make a particular point, as bright as the source from which they emanate. The statesman can concentrate the scattered arts ; he may carry out each discovery and invention to all its available uses, and thus elevate the nation which he serves, to the head of the progressive humanity. Yet if he would do this, he must not wait to be driven to the task, like a galley slave, by the rival and threatening policy of foreign governments. For the very fact that they coerce him, shows that they are already in his advance.

Supposing that a people has already adopted the common arts and sciences, as far as they are available, there will still remain certain discoveries and inventions of more recent date, which are not fully applied, or carried to their necessary consequences. Among these, in modern times, there has always been some one susceptible of such universality of application, as would seem to merit the particular consideration of statesmen. Take for instance, at the present time, the steam engine. What is susceptible of more universal application ? What, bringing out all its powers, can add greater energy and vigor to the arm of government ? What has, or can perform greater wonders ? Not gunpowder, not the compass, nay, not even the press. It may be made to toil in the field, and supplant the labor of the slave. It already works at the spindle, and the loom, and the forge, and the mine. It is even now, whilst I am speaking, moving over earth with the speed of wings, walking up the downward torrent, and triumphantly striding over the roaring billows of

the Atlantic. Already, where in use, has it reduced the distance one half between man and man, nation and nation, of extreme islands and continents of the habitable globe. It has brought civilization into immediate contact with barbarism, and christianity with heathenism.

Unless all history be false, and the eternal laws of matter and mind nothing but a dream, there can be little danger in predicting too much for the progress of this invention. Indeed, the danger is, that the most extravagant predictions will fall short of the reality. No matter what government first applies this invention to all its practical naval and military uses, other governments must follow, however reluctantly, or cease to exist. Nay, should an unwonted apathy seize on all civilized governments, society would, at length, do the work to a great extent at their hands. The progress of this invention is ever onward, and will not cease until it has filled the world with its consequences.

Already has it coasted the shores of India, penetrated its interior by river or road, invaded the empire of China, and roused the Chinese mind by its appalling apparition, from the long slumber of centuries past. Ere long it shall bind subject Asia to Europe by bands of iron, and the Cossack and the Tartar, whilst feeding their herds on the banks of the Don and the steppes of southern Russia, shall start with amazement at the shrill whistle of the locomotive, and the thunder of the rail-road car, as it sweeps on toward the confines of China. Can the monarchies of Europe slumber in security, whilst the im-

mense Russian Empire is thus centralizing and condensing its vast military resources and population at their backs? Never; their very existence must depend upon their resort to like means of defence or annoyance. And, from the heart of every monarchy of Europe, must diverge rail-roads to every assailable extreme; that when danger comes, and come it must, the whole war force of the nation may move, at a moment's warning, with the speed of wings, to the extreme point of peril.

The governments of Europe must become stronger internally and externally; more secure within and more formidable without, maugre the democratic tendencies by which they are threatened. Democracy is strong, but here is a power still stronger, that *will* have its course. It is a power with which governments *will*, and must organize themselves, at their peril, whatever may be their form. And when thus organized, their endurance must be as that of adamant. Organized on like basis, our representative democracy itself may be secure; but if not thus organized, it can only wait, with as much quietude as it may, to be gradually absorbed, and finally swallowed up by the strong organizations that may be brought to bear upon it. Think ye, that the military progress of this invention in the old world, is to produce no effect on the new; that the breadth of the Atlantic is to set bounds to its effects? The breadth of the Atlantic! Why, it has become a narrow frith, over which armies may be ferried in twelve or fifteen days, to land in slave or non-slave holding states at option; and that power, "whose

"Home is in the deep," already transports, over her watery empire, on the wings of this invention, her victorious cannon. Other governments are little behind her in the application of this power. Thus menaced, have we strength to do our duty with dignity? Can we much longer be governed by factions?

I am not suggesting a course of policy; I am simply carrying our premises to their necessary consequences; and to *that* end I ask: If we continue a free and independent people, must we not organize ourselves on the basis which this invention affords? Can we avoid it? Have we any choice but to radiate our country with communications for its defence, that the whole war force of the nation may be thrown with rail-road speed on any point of danger? This system of defence may not be adopted till the shock of some foreign invasion, or some terrible internal convulsion, forces upon the government the necessity of adopting it; and then, if it be the will of God that we continue one people, it will, and must be adopted. When it is done, this union will be complete; its duration will depend on no written scroll of parchment; on no variable popular breath; its strength on no constitutional constructions changing to suit the temper of the times, but the constitution itself, resolved by the law of progress, shall take form, over the whole face of the land, in bands of iron.

Such must be the political progress of this invention. Government, in this country, has as yet done nothing, but society has done much. True to itself

and its highest interests, it has been prompt in obedience to the law of progress. It has already extended, and still continues to extend the application of this sovereign invention. It has contracted, as it were, this country within half its former space. It has made a sparse population dense, and if a dense population has its evils, as in large cities it certainly has, the same invention offers an antidote. It can, without disadvantage, render those populations sparse. It can combine the morality and the occupation of a rural, with the intellectual activity of an urban population. It will and must proceed on its mission, by force of the very law which gave it existence, till the civilization of christendom, on the basis which it affords, has been fully accomplished, and then, by force of the same law, will it bear that civilization into the bosom of barbarism, christianize the nations, and establish the dominion of the arts over the broad face of earth and ocean.

Such is the nature of the law of progress. Ever adding to the triumphs of intellect, ever expanding the sphere of civilization, ever enlarging the domain of liberty and law, it began its political and social manifestations, as from a central point, in the sacerdotal caste of Egypt. It continued them in Greece, and there, with the fine arts and liberal sciences, expanded its influence over a wider compass. It reflected its action thence into the yet barbarous Latium. It created the civilization of Rome; Rome carried that civilization abroad among the nations of the earth, and enstamped her image wherever she set down the foot of her power. Barbarism came to re-

ceive the teachings of this civilization, at length christianized, and to open a sphere of action for the physical sciences and useful arts in the nether masses. Then came the era for deepening as well as widening the action of this law, by the aid of physical discovery and invention. Fire arms resolved the feudal system into a community of nations. The press inspired that community with a common soul. The compass revealed this western world, and pioneered to these shores the select mind and choicest institutions of Europe. It still urged on its discoveries ; it has nearly completed the exploration of the globe. And now comes this invention of Watt to perfect what these discoveries have begun, and then to penetrate into every part of the world, and to carry a christian civilization wherever it penetrates. Sprung, armed for its mission, from the head of the progressive humanity, it cometh forth the genuine offspring of that one Eternal Reason which hath ruled through all ages past. It embraceth within itself, struggling for utterance, the history of millenniums to come. It standeth before the portals of the future, but as no veiled Isis, as no mute and motionless Harpocrates. It hath a language its own ; and as it moveth to its task, it talketh freely of its mission. Thou unambiguous prophet ! what a voice for the future speaketh from the expanding volume of thy force ! What a tale to the future is foretokened in the movements of thy demon strength ! Great fashioner of the destinies of nations ! Thou hast hardly commenced thy career of victory ; but when it is finished, all lands

and all seas shall lie beneath thy feet, at once conquered and glorified by thy conquest !

And now, gentlemen, if such be the law of human progress, if it must thus ever operate from the past into the present, and through the present to the future, and as by a sort of logical process, what becomes of those doctrines of social and political reform, with which our land is now so rife, and with which the public ear is so incessantly abused ? What becomes of those ideas of a natural, absolute, unlimited and uncontrollable popular sovereignty, which is at once to bring humanity to perfection, by establishing a *natural* liberty and a *natural* equality in *social* and *political* life ? There may be a dire clashing among some of the ideas that are thus brought forcibly together ; but the wise advocates of these doctrines see it not, feel it not. They have sundry naked abstractions, which they have created for themselves, or others for them, upon which, by their own unassisted wisdom, they hope to build up society anew, on an improved plan. They would cut clear from the past ; they would establish a new theory of human nature, and base a human progress upon ideas and laws their own. Well ! let them do it ; but let them do it—as they must—with material their own. Let them create their world, and their man and woman, after their own image, and then, on their principles, run their course of events in rivalry with that of Divine Providence. But let them not lay their hands on those whom God has created after his image, and who are moving on to their high

destiny under his divine guidance. Let them not undertake to substitute their will for His, their laws for His, over any except their own, and we shall then know what that progress is about which they are now so abundantly eloquent.

In their estimation, all social and political institutions can be removed, by their sovereign wills, with the same ease that you take the glove from your hand, and any of their own imaginings substituted in their place. Their abstractions have no reference to the influence of the past on the present; no reference to the existing social or political organizations which have grown out of by-gone centuries; and it is not strange that they are utterly astonished to find, when they attempt to carry them into effect, that they are entering into conflict with all that the past has done for us. And then it is very natural for them to proceed, from lauding their own principles, to the abuse of the past; to the abuse of all our ancestral institutions and social and political ideas, as antiquated, and as obstructions to human progress.

Gentlemen, the present state of human progress is a child, of which the hoary past is the venerable father. And the child bears the image, and feels the pulsating blood, and enjoys the patrimony of its sepulchred parent. There is not an institution, or science, or art, of any practical value, nothing of the good or true, in social or political life, that has not come down to us as a creation, or as a result of the labors and achievements of the venerated dead; the dead, not of modern times

merely, but of far distant antiquity. The blood of Thermopylæ, of Marathon, and Platea, flowed not in vain for us. Homer sung, Plato mused, and Socrates moralized, for our benefit. For us Rome went forth in her invincible legion to conquer and humanize ; for us Roman wisdom planned and Roman valor fought, and laid broad and deep the foundations of christendom. Aye, something even of our nearer selves appears in the action of the distant past. That blood, which now circulates warm through the Anglo-American heart, may be traced through centuries of light and shadow, of triumph and trial, in the Anglo-Saxon line. For us it struggled under the Norman rule, and created *our* idea of liberty and law ; for us it struck the harp of heaven in Milton, of nature in Shakspeare, and proclaimed the laws of the universe in the philosophy of Newton. O ! let us build monuments to the past. Let them tower on mound and mountain ; let them rise from the corners of our streets, and in our public squares, that childhood may sport its marbles at their basements, and lisp the names of the commemorated dead, as it lisps the letters of its alphabet. Thus shall the past be made to stand out in a monumental history, that may be seen by the eye, and touched by the hand. Thus shall it be made to subsist to the senses, as it still lives in the organization of the social mind ; an organization from which its errors have died out, or are dying, and in which nothing but its Herculean labors do, or are to endure. Yes, let us sanctify the past, and let no hand, with sacrile-

gious violence dare mar its venerable aspect. Change indeed must come, but then let it come by force of the necessary law of progress. So shall the present still ever build and improve on a patrimony formed by the deeds of heroic virtue, and the labors of exalted intellect. So shall the great and glorious be added to the great and glorious, and the labors of the illustrious dead still be made fruitful by the labors of the illustrious living, time without end.

Such is the nature of that inheritance which has come down to us from the past, worthy to be honored by every philanthropic feeling for the present, and cherished by every hope for the future. And now do these theorists expect us to renounce this patrimony, and go and build on their barren abstractions?—commence a new progress on their empty speculations? And shall we do it? No, never, never, whilst humanity, through her grand organization of nations, yields a necessary obedience to the laws of the Supreme Reason, or Nature, through her universal frame of worlds, stands fast in the laws of her God!

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